

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/993,718

REMARKS

In response to the objection, claim 1 has been amended to employ the transitional phrase “comprising” as suggested by the Examiner.

Claims 1, 3, 4, 6 and 7 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,373,173 to Suzuki (Suzuki ‘173). Claims 1-5 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,414,420 to Suzuki (Suzuki ‘420).

In response, claim 1 has been amended to incorporate therein the recitation of claim 2, to thereby obviate the rejection over Suzuki ‘173. Additionally, claim 1 has been amended to incorporate therein the recitation of claim 6, to thereby obviate the rejection over Suzuki ‘420.

Withdrawal of the foregoing rejection is respectfully requested.

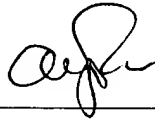
New claim 8 recites that a tangent to the exterior outline at a base point of the crimped curved portion and a line perpendicular to the axis projected on a virtual plane form an angle of 50° to less than 90° . Claim 8 further recites an angle of 50° - 80° . Support for the range of from 50° to less than 90° is found, for example, at page 16, lines 5-6 which describes an angle R of 90° or greater. This necessarily also defines an upper limit of less than 90° . Support for the upper limit of 80° as claimed in claim 8 is found, for example, at page 13, lines 20-21 and at page 18, lines 15-16. Claims 8 and 15 define over Suzuki ‘173 and Suzuki ‘420 which show an angle R of about 90° .

Withdrawal of all rejections and allowance of claims 1, 3-5 and 7-15 is earnestly solicited.

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In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

Respectfully submitted,



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PATENT TRADEMARK OFFICE

Date: April 30, 2003

APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 2 and 6 are canceled.

The claims are amended as follows:

1. (Amended) A spark plug[, wherein] comprising a cylindrical metallic shell having a tool engagement portion for mounting said spark plug on an engine [is] fixedly attached to an axially extending insulator inserted into said metallic shell, by crimping a protrusion formed at one opening portion of said metallic shell toward a crimp rest portion formed on an outer circumferential surface of said insulator to thereby form said protrusion into a crimped portion of said metallic shell, [and]

wherein a distance between opposed sides of said tool engagement portion is not greater than 14 mm; and said crimped portion as projected orthogonally on a virtual plane in parallel with an axis of said insulator is curved such that an end-side part of said crimped portion approaches said insulator, such that an exterior outline of said crimped portion has an outwardly convex crimped curve portion at the end-side part, and such that a tangent to said exterior outline at a base point of said crimped curve portion and a line perpendicular to the axis projected on the virtual plane form an angle of 50° - 110° ,

wherein said crimped portion as projected orthogonally on said virtual plane has a height in the range of from 1.0 to 3.0 mm as measured along the axis of said insulator,

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wherein said metallic shell comprises a thin-walled convex portion located at an axially intermediate position thereof and is radially outwardly convex, a first flange-like portion provided circumferentially in a projecting condition, and a second flange-like portion provided circumferentially in a projecting condition, said first and second flange-like portions being located at axially opposite ends of said thin-walled convex portion; and

said crimped portion projects axially from an inner edge of an end face of said first flange-like portion in opposition to said thin-walled convex portion.

7. (Amended) The spark plug as claimed in [claim 6] claim 1, wherein an outer surface of said thin-walled convex portion is radially outwardly convex, and an inner surface of said thin-walled convex portion is radially inwardly convex.

Claims 8-15 are added as new claims.